

Daily GLOWBUGS

Digest: V1 #7

via AB4EL Web Digests @ SunSITE

Purpose: building and operating vacuum tube-based QRP rigs

[AB4EL Ham Radio Homepage @ SunSITE](#)

%%%%%%%% GlowBugs %%%%%%%%% GlowBugs %%%%%%%%% GlowBugs %%%%%%%%% GlowBugs %%%%%%%%%

Subject: glowbugs V1 #7

glowbugs

Tuesday, April 15 1997

Volume 01 : Number 007

Date: Mon, 14 Apr 1997 02:06:37 -0600 (MDT)

From: toyboat@freenet.edmonton.ab.ca

Subject: Termite-1

Hello,

Well, I finally completed a project that wasn't haywired and temporary. Feels good. Haven't done that for a while.

Termite-1 came to life this afternoon. A combination of locally scavenged and surplus parts, deliberately very simple, and low power, it owes its life to many glowbugs who posted ideas in general, and gave me feedback on parts substitution when asked.

Termite-1 is the well-known 6V6 or 6F6 one-tuber, built on a wooden chassis, from the '50s. The design used open slats on top to avoid making holes for tube sockets and wiring to pass through. Lorenz basket-weave coils of #18 bell wire, supported on sucker sticks were a distinctive feature.

My version is beefed up to suit my penchant for over-engineering. I used (7) 1/4" dowels, instead of (3) sucker sticks. My chassis top is solid 1/2" poplar, instead of the 1/4" thick slats. I cut the tube socket holes with a fret saw, in true '50s elbow-grease fashion. Instead of 6-32 hardware and Fahnestock clips, I used 8-32 hardware and wingnuts for coil, key, and antenna connections. I handwound my RF choke on a 3/4" diameter plastic sewing spool with #30 enamelled wire. A colorburst crystal occupies the place of honor. A BC variable is used as the plate tuning capacitor with 300VDC B+ connected directly across it. Despite the very close spacing, it works just fine. I'm using a 6L6 with 180VDC on the screen.

I opted for the "QSL Forty circuit" of Fred Sutter, instead of the original tri-tet design, because it was simpler. My power supply uses 40 uF motor start capacitors, a 3 H choke, and honking big old Hammond 300-0-300 VAC power trafo, along with a Russian 5Y3GT. The supply chassis is the same design and size as the oscillator. The two chasis are connected by an octal plug and octal socket, with a #18 solid wire homemade 4-conductor power cable from the oscillator.

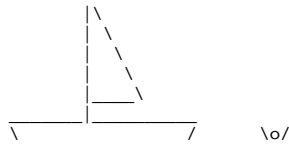
Dummy load tests are encouraging. Listening in on my Heathkit HR-10B minus antenna, the note seems clean and chirp-free. Adjustment of the tank is fairly critical to achieve stability. A 25 Watt bulb lights dimly as the dummy load. Them goofy-looking coils work! I used a panel lamp as a crystal fuse, which lights up during the tune-up and when the key is held down (darkened room).

I used Radio Shack #18 solid plastic-covered hookup wire for coils and wiring throughout, to emulate the original bell wire.

Well, the L-coupler is next on the agenda. (A license would also be useful, I guess, so I gotta practice my morse and take the plunge.)

All in all, a very nice little beginners rig for anachronists.

Regards,
Shane Wilcox



Shane <toyboat@freenet.edmonton.ab.ca>

Date: Mon, 14 Apr 1997 11:44:03 -0400 (EDT)
From: rdkeys@csemail.cropski.ncsu.edu
Subject: Re: New Baby Regen

> Just thought I'd pass on this "birth" announcement. At about 2100Z today a
> new regen came into the world howling and screaming

Wow! Congrats, and all that.....(:+)}.....

> These things are pretty amazing! I can hear most of what I can hear on my
> Icom this afternoon on 80 meters. A bit faint sometimes but copyable.

That demonstrates the sensitivity of the little darlings.

> A question for you gents who run regens.....how much antenna coupling do
> you use? I've just got one turn (actually less than that. It comes off the
> antenna connector, around the back of the coil and back to the connector.
> More like about 2/3 of a turn.)

General Concepts of Coupling in Regenerators:

1. Use as loose coupling as possible to maximize selectivity.
In the old days, as much 6 inches of coupling was used on 200 meters and down, with good success. Typically a 1 turn link at 1 inch of coupling should be plenty. On a detector set, you might couple a little more closely than that, up to critical coupling. On a detector and one-step audio set, much less coupling is needed. On a detector and two-step set, even less coupling is needed.
2. Use tighter coupling for listening to a wider band of frequencies at once (+- 5-10kHz). Increase regeneration to compensate for overcoupling pulling the detector out of oscillation. (NOTE: pulling of a signal in a regenerative detector is almost ALWAYS due to overcoupling).
In the old days (1915-1940), tighter coupling was used to generally monitor 600 meters in the silent periods, just in case a signal was off a bit from the 600 meter wave.
3. In general, do not couple closer than ``critical coupling''. Critical coupling is that amount of coupling, for a GIVEN signal, that will not allow the primary circuit to have any appreciable effect on the secondary circuit. The test for critical coupling is maximum signal input to the detector without pulling the detector out of oscillation, and is found by the presence of only a faint or slight pull and no significant plop or click as the tuning is swept past the given signal. If you hear a pair of clicks as you sweep past a signal, you are over-critically-coupled. You may not hear distinct clicks as the detector is pulled out of oscillation, but may hear a sort of plop or a stop in detector

action on a CW or SSB signal. Advancing the regeneration is not the proper cure. Decoupling is the proper cure, with the regeneration on the ragged edge of oscillation. The critical coupling value will change as the signal strength of the received station changes.

4. A 1 turn link or a 1 pf coupling capacitor is plenty for HF shortwave use. On MF or LF, a higher degree of coupling is used, traditionally, but is not absolutely necessary. The idea is to optimize coupling with the detector at its most sensitive point (on the ragged edge of oscillation). If you use more than 1 turn coupling, you may/will have to reduce it on strong signals for proper detector action. Likewise for capacitive coupling, in general.

The Magic Rule of Regenerator Coupling: Use the minimum possible for any
given signal.

73/ZUT DE NA4G/Bob UP

Date: Mon, 14 Apr 1997 10:29:01 PDT
From: "Jeff Duntemann" <jeffd@coriolis.com>
Subject: The Junkbox Radio Net on 6m!

Hi gang--

After much muttering on 52.525 FM over the past month or so, it finally happened last night: A 6M AM net on 50.4mc in the metro Phoenix area. I'm calling it the Junkbox Radio Net for lack of anything better, and we intend to hold it every Sunday night at 7PM local time. It's local now, but give us some sunspots, and all bets are off.

Last night we had four check-ins. KE7TV had his Gonset G50, N6IME had a Clegg Zeus with an Interceptor amp behind it (he the BIG signal) WA7CPA had a recent-build sand-state Icom with a built-in spectrum analyzer (forgot the model number, but yeeek, what a thought!) and I had my modest but functional Clegg 99er. As a test I drug my Sixer off the high shelf, plugged it in, and was copied well by everybody but KE7TV, who, at 15 miles from me, was the most distant station in the net.

It was like coming home again.

After the last check-out I feverishly began re-forming the electrolytics on my long-neglected Ameco TX-62, which with its 7894 final will double or triple my power output for the next go-round. After that, well, I have a Heath Seneca to resurrect. But now there's a point to it all: Somebody to talk to!

This note is to invite all glowbuggers from the Phoenix area to blow the brown dust off that AM gear and dig around for your 50.4 crystals. (8400mc on the label.) Sunday nights, 7PM. Make 'em glow--and come home again.

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Mon, 14 Apr 1997 10:31:36 PDT
From: "Jeff Duntemann" <jeffd@coriolis.com>
Subject: Re: AM Modulation - Linear Amplification?

At 08:42 AM 4/12/97 -0700, you wrote:

>Got a interesting little AM "Linear amp" the other day. Homebrew - maybe
>garage operation production. Rather simple but unusual. Straight-foward
>single 6146 tuned input/output (yes 27 MHZ, soon to be changed!!) with a
>twist...

Did you get a manual? I would like to see the schematic on this one. I've been looking for a linear for my low-power 6M rigs, and this could make a fascinating project--I would definitely learn something.

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Mon, 14 Apr 97 12:16:41 EDT
From: JOHN_SEHRING.parti@ecunet.org
Subject: ONE TOOBERS

To: glowbugs@www.atl.org

Speaking of 1 tube xmtrs...

Has anyone tried the one toober using 117L7GT in 12/46 CQ mag? (I haven't.)

It's an AC/DC job to boot so no xfmr needed either but watch your fingers!

The tube is a rectifier diode/beam power pentode combo. Input power claimed to be 5 watts.

-John Sehring (Mon, Apr 14, 1997 6:22 am MT @Baker, Montana) UCC WB2EQG

Date: Mon, 14 Apr 1997 18:31:44 +0000
From: Sandy W5TVW <ebjr@worldnet.att.net>
Subject: Re: ONE TOOBERS

At 04:16 PM 4/14/97 +0000, you wrote:

>To: glowbugs@www.atl.org

>

>Speaking of 1 tube xmtrs...

>

>Has anyone tried the one toober using 117L7GT in 12/46 CQ mag? (I haven't.)

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>

> -John Sehring (Mon, Apr 14, 1997 6:22 am MT @Baker, Montana) UCC WB2EQG

>

Used to build these, way back! They ran about 2 watts out. I have a really nice push-pull oscillator I built using 50JY6 TV sweep toobs. Uses AC/DC supply with a voltage doubler. It will run about 40 watts out! I don't think anyone wants to publish this kind of circuit nowadays! They are safe if you CHECK LINE POLARITY!
It's the lightest weight 40 watter I ever built!

Always wanted to build a rig using three 117L7 tubes. One in oscillator and two in parallel in the final stage. Now you can do the same thing with 50L6's or 50C5's or 50B5's, using silicon diodes.

73,
E. V. Sandy Blaize, W5TVW
"Boat Anchors collected, restored, repaired, traded and used!"
417 Ridgewood Drive,
Metairie, LA., 70001
ebjr@worldnet.att.net
Looking for: 860 tubes, WL-460 tubes
Butternut HF2V antenna, G-R test gear.....*

Date: Mon, 14 Apr 97 15:02:10 cst
From: mack@mails.imed.com
Subject: Re: The Junkbox Radio Net on 6m!

Jeff:

I can't wait for the sunspots either! I have a Knight TR106 ready for the air waves thanks to a fellow in the Chicago area where there is also some 6M AM activity.

Ray Mack
WD5IFS
mack@mails.imed.com
Friendswood (Houston), TX

Reply Separator

Subject: The Junkbox Radio Net on 6m!

Author: "Jeff Duntemann" <jeffd@coriolis.com> at mails

Date: 4/14/97 1:31 PM

Hi gang--

After much muttering on 52.525 FM over the past month or so, it finally happened last night: A 6M AM net on 50.4mc in the metro Phoenix area. I'm calling it the Junkbox Radio Net for lack of anything better, and we intend to hold it every Sunday night at 7PM local time. It's local now, but give us some sunspots, and all bets are off.

Date: Mon, 14 Apr 1997 13:57:08 PDT

From: "Jeff Duntemann" <jeffd@coriolis.com>

Subject: Inductor Data Collection

Hi gang--

This was the first weekend I had free in some time, and spent most of it out in the garage. (Alas, I won't have another like this for awhile...) The project at hand is rebuilding a homebrew power supply purchased for one US dollar at the Scottsdale hamfest about a month back. The supply was obviously a quick project, lacking certain amenities that I favor in power supplies, like an on/off switch, pilot lamp, and bleeder resistor. Also, there are some design peculiarities like a MALE 4-pin plug sticking up out of the top of the chassis, with 550 beautiful volts on pin 2.

It wasn't beautiful, shall we say, having been built on a home-made galvanized iron chassis. (To be fair, the guy had a bending brake and knew how to use it, and even soldered all the seams well enough to be watertight.) But what it did have was a HUGE Thordarson power transformer and *two* massive Thordarson filter chokes. I'm hoping to use it to power both a 40 watt HF CW transmitter and the classic 25-watt Handbook 6BQ6 modulator.

One challenge is knowing just what I've got here. The Thordarson inductors are marked with model numbers, but in rooting through my file folder of transformer cross-references I realize I don't have data on either the transformer or the choke. So my first point here is to ask if anyone else can supply data on the following Thordarson numbers:

Transformer: TS-24R07

Choke: T-20C54

My second point is that I realized I have quite a few transformer and inductor data sheets and cross-reference tables, many of them gathered from NOS transformers and inductors I've nailed over the years. These might be useful to others on this list. So I'm going to run off a few sets on my copier and make them available for a large SASE. And if I'm going to do that, it would make sense to get a few more data sheets into the set. So...if you have any old data sheets from any transformer, choke, or inductor products (Thordarson, Triad, UTC, Meissner, Merit, J. W. Miller, and so on) send me a CLEAN copy--clean enough so that a second-gen copy would be readable. I'll add them to the sets I'll be making up.

Send them to:

Jeff Duntemann
The Coriolis Group
14455 N. Hayden Road, Suite 220
Scottsdale AZ 85260

I'll let the group know throughb the list when the set is finished. Give me about a month.

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Mon, 14 Apr 1997 19:09:53 -0400 (EDT)

From: Carl Ratner <artdeco@bway.net>

Subject: Re: Inductor Data Collection

Jeff Duntemann wrote:

>One challenge is knowing just what I've got here. The Thordarson
inductors
>are marked with model numbers, but in rooting through my file folder of
>transformer cross-references I realize I don't have data on either the
>transformer or the choke. So my first point here is to ask if anyone else
>can supply data on the following Thordarson numbers:
>
>Transformer: TS-24R07
>Choke: T-20C54

Found 'em in my 1956 Allied catalog. They lack the "TS" and "T"
prefixes, but the rest of the numbers match.

The 24R07 transformer is in Thordarson's Economy "24" series. It's
rated at 800V CT @ 200 ma; 5V @ 3A; 6.3V CT @ 5A, weighs 9.5 lbs, and
cost \$8.23 back then!

Your 20C54 choke is an 8 Henry unit, 150 ma, DC resistance of 145
ohms, insulation test 2700 V. Weighs 3 lbs, and cost a whopping \$3.82
in 1956.

Nice find!

- --Carl Ratner
artdeco@bway.net

Date: Mon, 14 Apr 1997 19:40:21 -0400
From: "Ornitz, Barry" <ornitz@eastman.com>
Subject: RE: Core saturation musings

Hi Mike Silva and gang,

Thanks to the urging of Larry Ware, I finally read some of the more
recent Boatanchors and Glowbugs postings of late. Work has really been
hectic and I have had NO time for this stuff lately.

I saw your idea and thought it was really neat - I just HAD to comment.
A conventional power transformer, especially one with a 240 volt
primary, should make a wonderful modulation transformer. In fact, this
was one of the best uses for old WWII surplus 400-cycle transformers.

Your idea of passing DC through the filament winding to buck the
magnetic field produced by the DC going through the primary winding is a
great one. Naturally the normal transformer secondary would become the
push-pull input for the modulator tubes.

There is only one minor problem. You cannot feed the bucking DC current
through the filament windings from a low-impedance or constant voltage
source; you will short out the audio. It would be better to derive this
current from a constant current source which would have a very high
impedance. BTW, to minimize this current, which should be the DC
current running through the feed to the transmitter multiplied by the
turns ratio of the transformer (PRI:FIL), run the filament windings in
series-aiding (so the turns ratio is lower).

I know it will make the diehard vacuum folks wince, but I can envision
an operational amplifier circuit that would produce a constant current
output directly proportional to the final plate current. This would
keep the transformer core from DC saturation at any power level. But
then, if I went to this much trouble, I would go with pulse-width
modulation and be done with it.

ornitz@eastman.com
>
73, Barry WA4VZQ

Date: Mon, 14 Apr 1997 22:41:03 -0400 (EDT)
From: EWoodman@aol.com
Subject: AMECO TX-62 and 6M AM

>After the last check-out I feverishly began re-forming the electrolytics on
>my long-neglected Ameco TX-62, which with its 7894 final will double or
>triple my power output for the next go-round.

>blow the brown dust off that AM gear and dig around for your 50.4 crystals.
(8400mc

>on the label.)

Jeff,
Where the heck do you get 6m crystals? I've got a TX-62 in really nice shape, all cleaned up, new final tube, etc. but NO CRYSTALS! Tested it into a dummy load with a couple of 2m crystals that I have and that's as far as I got. Also built a little receive converter so I'm ready to go (well almost ready.....tough with no crystals). So.....any leads on a source?

73 Eric KALYRV

Date: Mon, 14 Apr 1997 22:08:50 -0500 (CDT)
From: mjsilva@ix.netcom.com (michael silva)
Subject: RE: Core saturation musings

Barry wrote:

>Your idea of passing DC through the filament winding to buck the
>magnetic field produced by the DC going through the primary winding is
>a great one. Naturally the normal transformer secondary would become
>the push-pull input for the modulator tubes.

Thanks -- I was afraid everyone would laugh <g>.

>
>There is only one minor problem. You cannot feed the bucking DC
>current through the filament windings from a low-impedance or constant
>voltage source; you will short out the audio. It would be better to
>derive this current from a constant current source which would have a
>very high impedance.

Yes, you're right. I had completely neglected that consideration.

>I know it will make the diehard vacuum folks wince, but I can envision
>an operational amplifier circuit that would produce a constant current
>output directly proportional to the final plate current. This would
>keep the transformer core from DC saturation at any power level...

Yes, I thought of the same thing. Of course, one could also come up with a bridge circuit, complete with a big knob to twiddle and an eye tube to indicate, to do the same thing -- now that's diehard!

73,
Mike, KK6GM

Date: Mon, 14 Apr 1997 23:36:36 +0000
From: "Brian Carling (Radio G3XLQ / AF4K)" <bry@mnsinc.com>
Subject: Re: The Junkbox Radio Net on 6m!

GREAT STUFF Jeff, maybe we can collaborate on this SENECA business! I have one of those and a Gonset Goony III to play with on 50.4 MHz out here in the Washington DC area!

Bry in MD

On 14 Apr 97 at 10:29, Jeff Duntemann spoke about The Junkbox Radio Net on 6m! and said:

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>
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> finally happened last night: A 6M AM net on 50.4mc in the metro
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> --73--
>
> --Jeff Duntemann KG7JF
> Scottsdale, Arizona
>
>

*** 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA *
** E-mail to: bry@mnsinc.com *
*** See the great ham radio resources at: *
** <http://www.mnsinc.com/bry/> *

Date: Mon, 14 Apr 1997 22:39:53 -0500
From: bill@skeeter.frco.com (William Hawkins)
Subject: RE: Core saturation musings

Lessee, could you use an adjustable DC current to make saturation
work_for_ you as a compressor? You'd need to watch it on a
modulation monitor.

Might be worth your while to work out the numbers for a low
inductance, low voltage, high current choke to isolate your
'bucking' winding from the big caps in the LV supply.

Regards,
Bill Hawkins bill@skeeter.frco.com

Date: Mon, 14 Apr 97 23:33 CDT
From: Spencer Petri <spetri@e-tex.com>
Subject: Crystals

Those of you looking for xtals might try PR Crystals, Petersen Radio Co.
Inc., 2735 Avenue A, Council Bluffs, IA 51501, 712-323-7539.

As far as I know they send out no poop sheet. Just call. They send the
crystals and you pay when received. Can't beat a deal like that. I'm usually
told it'll take a week or two and then the crystals show up here in 3 or 4
days.

Just a satisfied customer.

73 de Pete WA5JCI

EM-21--6 Mtr -- WAS #490, WAC CW, DXCC/91 Countries, VUCC/618 Grids

2 Mtr -- 36 States -- VUCC/183 Grids

Date: Tue, 15 Apr 1997 08:06:10 +0000
From: "Brian Carling (Radio G3XLQ / AF4K)" <bry@mnsinc.com>
Subject: Re: ONE TOOBERS

There is a fellow selling a KIT for a 50C5 xmtr along these lines.

I am trying to find out about it from him and we have exchanged a
couple of e-mails.

When I get the scoop I will post it at my web site under KITS.

<http://www.mnsinc.com/bry/hamfiles.htm>

On 14 Apr 97 at 18:31, Sandy W5TVW spoke about Re: ONE TOOBERS and

said:

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> 73,
> E. V. Sandy Blaize, W5TVW
> "Boat Anchors collected, restored, repaired, traded and used!"
> 417 Ridgewood Drive,
> Metairie, LA., 70001
> ebjr@worldnet.att.net
> **Looking for: 860 tubes, WL-460 tubes**
> **Butternut HF2V antenna, G-R test gear.....**
>
>
*****
*** 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA *
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** http://www.mnsinc.com/bry/ *
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End of glowbugs V1 #7

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Created by **Steve Modena, AB4EL**
Comments and suggestions to modena@SunSITE.unc.edu
